SECTION 7: Troubleshooting

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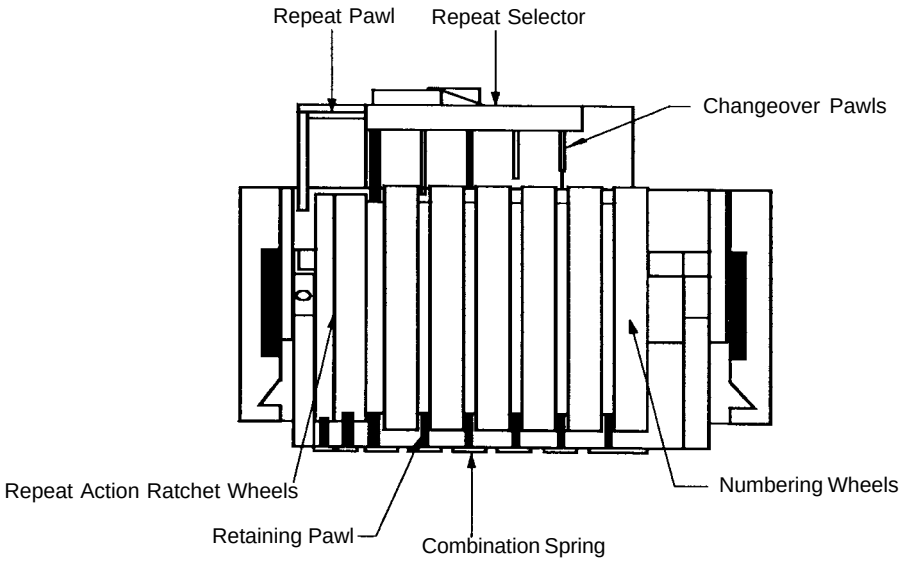
Troubleshooting

1. Numbering Heads

If you encounter problems such as Numbering Wheels not turning, numbers partially printing, or Numbering Wheels turning out of sequence, the Repeat Selector or other components may be out of alignment. To check for proper alignment, remove the Numbering Head from the machine and press down on the Numbering Head Shaft. You will see the Numbering Head Frame slide down the Print Head Frame. At the same time, the Inkpad Holder Mount Bracket will swing away exposing the Numbering Wheels.

The Numbering Wheels and Repeat Action Ratchet Wheels are mounted on a keyed shaft inside the Numbering Head Frame. These wheels are held in place by the Retaining Pawls which are, in turn, forced to the Numbering Wheel flats by the Comb Spring. The Retaining Pawls must be aligned with the flats of the Numbering Wheels or what looks like in between the Numbering Wheels. The Comb Spring must also apply a constant pressure against the Retaining Pawls. If there is misalignment in this area, the Numbering Wheels may spin freely causing partial impression or random numbering sequences.



Like the Retaining Pawls, the Changeover Pawls of the Repeat Selector must be aligned to the flats of the Numbering Wheels. When an impression is made, the Numbering Wheel Frame is propelled down the Print Head Frame, the Inkpad Holder Mount Bracket swings away, the Repeat Selector is pushed back from the Numbering Wheels, and the Numbering Wheels are then exposed to make their impression on the stock. After reaching the bottom of its stroke, the Numbering Wheel Frame then returns to the top position. As this happens, the Changeover Pawls once again come into contact with the Numbering Wheel flats. Depending upon the action or sequence in place, the Repeat Pawl may only interact with one of the Repeat Action Ratchet Wheels before the Changeover Pawls interact with the Numbering Wheel flats. In most instances, the longest Changeover Pawl comes into contact with the flat of the Unit Wheel to change it over. After a “0” has been printed, there will be more Changeover Pawls changing more Numbering Wheels. When this happens, you may find the next impression, with a “9” as the last digit, printing lightly. This can be overcome by increasing the Impression Control to provide a stronger pulse to turn over more wheels. If you are encountering problems where numbers are not turning over, numbers are printed out of sequence etc., then the problem may be that the Changeover Pawls of the Repeat Selector are not aligned with the flats of the Numbering Wheels.

If the Repeat Selector is not mounted square on the Print Head Frame by means of the two Repeat Selector Adjustment Screws, the Changeover Pawls will not land square on the flats of the Numbering Wheels. As a result, some of the Numbering Wheels may fail to increment properly. If you experience this problem, visually check that the Changeover Pawls are riding in between the Numbering Wheels and that they are centered on their flats. If not, the whole Repeat Selector may be moved to the proper position by loosening the Repeat Selector Adjustment Screws. Also, make sure that the Changeover Pawls are parallel to each other.

2. Print Quality

Symptom	Solution
Unveven crash impression	Adjust for impression flatness (see p.5-6)
Faint color or uneven color impression	Replace Inkpad (see p.5-3)
Excessive Inking	Clean head (see p.6-1); condition Inkpad (see p.5-3); replace leaking Inkpad
Too heavy (embossing) or too light of a crash	Adjust Impression Control Dial (see p. 5-5); check Platen Pad, if there is excessive wear, the Platen Pad may need to be replaced.
Ink spreading, smudging, or not drying	Numbering ink is mineral oil with pigment. The oil is absorbed by the paper leaving the pigment behind as an image. On slick or glossy stocks, the supplied Inkpad will not work effectively. A non-corrosive ink must be used as a substitute (such as fountain pen ink). **Note:** An important factor with alternative inks is that the Numbering Head be cleaned immediately after a job has been run.

3. Registration

Symptom	Solution
Inconsistent number location (poor number register)	Check that the photocell is clear of any obstacles; if numbering is totally random, the photocell may require readjustment i.e. if it is too sensitive, it will mis-register the lead edge of the sheet.
Perf/Score/Slit line skewing	With a straight edge, check that the perf/score/slit is straight. If the perf/score/slit line is not straight but is bowed or has a tail whip, the rollers on the Main Shaft and/or the Exit Shaft may not be evenly balanced causing uneven pressure on one side of the stock. Readjust the rollers so that they are evenly spaced across the shaft. A bowed line usually indicates the rollers on the Main Shaft are uneven; a tail whip usually means the rollers on the Exit Shaft are uneven.

4. Error Messages

Group	Error Message	Description
Paper Handing Errors	PAPER JAM	A PAPER JAM CONDITION EXISTS
	INSERT PAPER	A PAPER OUT CONDITION EXISTS
	PAPER TOO LONG	A PAPER LONG CONDITION EXISTS
	PAPER TOO SHORT	A PAPER SHORT CONDITION EXISTS
Solenoid Errors	SOL ERROR 10	SOLENOID CHANNEL 1 OPEN
	SOL ERROR 11	SOLENOID CHANNEL 1 SHORT
	SOL ERROR 12	SOLENOID CHANNEL 1 HOT
	SOL ERROR 13	SOLENOID CHANNEL 2 OPEN
	SOL ERROR 14	SOLENOID CHANNEL 2 SHORT
	SOL ERROR 15	SOLENOID CHANNEL 2 HOT
	SOL ERROR 16	RESERVED
	SOL ERROR 17	RESERVED
	SOL ERROR 18	NO SOLENOID BOARD ATTACHED
	SOL ERROR 19	RESERVED
	SOL ERROR 20	MSTP DID NOT REPORT SOLENOID(S) FIRED
	SOL ERROR 21	ICPU AND MSTP SOLENOID BOARD TYPE DO NOT MATCH
	SOL ERROR 22	ICPU AND MSTP SOLENOID ADC LIMITS DO NOT MATCH
	SOL ERROR 23	SOLENOID CHANNEL 1 REPORTED ONLY 1 HEAD INSTEAD OF 2
	SOL ERROR 24	SOLENOID CHANNEL 2 REPORTED ONLY 1 HEAD INSTEAD OF 2
Motor Errors	MOT ERROR 30	MOTOR RUN TIMEOUT
	MOT ERROR 31	MOTOR TURN ON/OFF TIMEOUT
EEPROM Errors	EEP ERROR 40	UNABLE TO READ FROM EEPROM
	EEP ERROR 41	UNABLE TO WRITE TO EEPROM
	EEP ERROR 42	CRC INVALID FOR EEPROM PROGRAMMABLE PARAMETERS
	EEP ERROR 43	CHECKSUM INVALID FOR EEPROM SOLENOID PROGRAM
	EEP ERROR 44	TESTING FAILED DURING TEST/RE-FORMAT EEPROM
	EEP ERROR 45	EEPROM VERSION FORMAT ID# DOES NOT MATCH SOFTWARE
Memory Errors	RAM ERROR 50	RAM SELF-TEST READ/WRITE FAILURE
	RAM ERROR 51	CHECKSUM INVALID FOR RAM SOLENOID PROGRAM
	RAM ERROR 52	CRC INVALID FOR RAM PROGRAMMABLE PARAMETERS
	RAM ERROR 53	SETUP MODE SOLENOID PROGRAM HIT INDEX OUT OF RANGE
	RAM ERROR 54	SOLENOID PROGRAM NUMBER CORRUPTED

Error Messages (continued)

Group	Error Message	Description
Hardware Errors	LINE VOLTAGE ERROR	AC LINE VOLTAGE OUT OF OPERATION RANGE
	MOTOR VOLTAGE ERROR	MOTOR VOLTAGE OUT OF OPERATION RANGE
SCI Errors	SCI ERROR 70	ICPU SCI RECEIVE TIMEOUT ERROR
	SCI ERROR 71	ICPU SCI RECEIVE OVERFLOW ERROR
	SCI ERROR 72	ICPU SCI TRANSMIT TIMEOUT ERROR
	SCI ERROR 73	ICPU SCI INVALID ACK RECEIVED
	SCI ERROR 74	ICPU SCI CORRUPTED MESSAGE RECEIVED
	SCI ERROR 75	ICPU SCI TRANSMIT ABORTED
	SCI ERROR 76	ICPU SCI WAITING PERIOD FOR MSTP MESSAGE EXPIRED
	SCI ERROR 77	ICPU SCI INVALID MESSAGE TYPE RECEIVED
	SCI ERROR 80	MSTP SCI RECEIVE TIMEOUT ERROR
	SCI ERROR 81	MSTP SCI RECEIVE OVERFLOW ERROR
	SCI ERROR 82	MSTP SCI TRANSMIT TIMEOUT ERROR
	SCI ERROR 83	MSTP SCI INVALID ACK RECEIVED
	SCI ERROR 84	MSTP SCI INVALID COMMAND RECEIVED
	SCI ERROR 85	MSTP RECEIVE OVERRUN ERROR
	SCI ERROR 86	MSTP RECEIVE FRAMING ERROR
Miscellaneous	UNKOWN ERROR	MSTP ERROR REPORTED IS UNDEFINED

5. Errors at Power Up

Solenoid Errors

If this error occurs, the machine should be powered down and then back up again to verify that the error occurs at least two consecutive times. This error cannot be cleared by a keypress – the fault must be fixed in order to clear the error.

If a solenoid error occurs at power up, these are the most likely causes:

- Incorrect solenoid board attached to PSTP board
- Incorrect ICPU/Display SW

EEPROM Errors

If an EEP error occurs at power up, these are the most likely causes:

- Switching PSTP boards without reformatting the ICPU EEPROM
- Faulty EEPROM on ICPU

Use the following procedures to clear the EEP error:

- Press STOP or ESC until all EEP errors are cleared
- Format EEP
- Power the machine down
- Power up the machine again

If you still encounter EEP errors, replace the ICPU board.

SCI Errors

If SCI errors occur at power up, they cannot be cleared by a keypress - the fault must be fixed in order to clear the error.

Use the following procedures to isolate and clear the problem:

- Check for SW mismatches – verify that PSTP SW is compatible with ICPU SW
- Refer to section on PSTP transmit and receive LEDs

RAM Errors

If RAM errors occur at power up, the Photocell LED will flash on the display boards. This type of error cannot be cleared by a keypress - the fault must be fixed in order to clear the error.

- The probable cause of the problem is a faulty RAM chip – replace ICPU board

6. Errors Encountered When Running Programs

Paper Errors

Generally, paper errors can be cleared by hitting STOP or ESC. Reference the error messages table to identify the cause of the problem.

Solenoid Errors

Generally, solenoid errors can be cleared by hitting STOP or ESC. Reference the error messages table to identify the cause of the problem.

SCI Errors

Generally, SCI errors can be cleared by hitting STOP or ESC. If the error message keeps occurring, then there is probably a fault with either the hardware or software. Power down the machine and then power up again. If you still get SCI errors, then refer to the section on PSTP transmit and receive LEDs.

Motor Errors

Generally motor errors can be cleared by hitting STOP or ESC. If the error message keeps occurring, then there is probably a fault with the hardware – replace PSTP board.

7. LED Indicators

PSTP Board

LD1: +320V Supply Indicator
This LED indicates whether the +320V supply is live. If it is not on, the following are possible causes in order of probability:

- Machine not turned on
- Fuse Blown
- AC power connector not plugged into J2 on PSTP board or cable is broken
- Jumper not in J5 or incorrect jumper in J5 (black for 110VAC, red for 220VAC)
- Bridge doubler not functioning – replace PSTP board

LD2: Secondary +5V Supply Indicator
This LED indicates whether the secondary +5V supply is live. If the LED is not on, the following are possible causes:

- Machine not turned on
- AC power connector not plugged into J2 on PSTP board (or cable broken)
- Jumper not in J5 or incorrect jumper in J5 (black for 110VAC, red for 220VAC)
- X2, VR2 or VR1 not functioning or short on S+5V line – replace PSTP board

LD3: Secondary +12V Supply Indicator
This LED indicates whether the secondary +12V supply is live. If this LED is not on, the following are possible causes:

- Machine not turned on
- AC power connector not plugged into J2 on PSTP board (or cable broken)
- Jumper not in J5 or incorrect jumper in J5 (black for 110VAC, red for 220VAC)
- X2, VR2 not functioning or short on S+12V line– replace PSTP board

LD4: Motor Voltage Supply Indicator
This LED indicates whether the motor voltage supply is live and should only be on when the motor is brought online. If this LED is not on, the following are possible causes:

- Motor not online
- +320V supply not functioning – verify that LD1 is on
- motor switching supply not functioning – replace PSTP board

LD5: Primary +12V Supply Indicator
This LED indicates whether the primary +12V supply is live. If this LED is not on, the following are possible causes:

- Machine not turned on
- AC power connector not plugged into J2 on PSTP board (or cable broken)
- Jumper not in J5 or incorrect jumper in J5 (black for 110VAC, red for 220VAC)
- X1 or VR4 not functioning or short on P+12V line– replace PSTP board

LD6: Primary +5V Supply Indicator
This LED indicates whether the primary +5V supply is live. If this LED is not on, the following are possible causes:

- Machine not turned on
- AC power connector not plugged into J2 on PSTP board (or cable broken)
- Jumper not in J5 or incorrect jumper in J5 (black for 110VAC, red for 220VAC)
- X1, VR3 or VR4 not functioning or short on P+5V line– replace PSTP board

LD7: Perf Status Indicator
This LED indicates the status of the Perf. If the Perf is closed, LD7 will be on. If the Perf is open, LD7 will be off. If this LED does not change state when opening/closing the Perf shield, the following are the possible causes:

- Perf cable not plugged into J11 on PSTP board or Perf cable broken
- Perf switch broken
- Perf circuitry not functioning – replace PSTP board

LD8: Start Photocell Status Indicator
This LED indicates the status of the Start Photocell – paper reflects to detector. If there is no paper under the photocell, LD8 will be off. If there is paper under the photocell, LD8 will be on. If this LED does not change state when breaking the Start Photocell, the following are possible causes:

- Start Photocell not plugged into J12 on PSTP board or Photocell cable broken
- Photocell not aligned properly or photocell broken
- Start photocell circuitry not functioning – replace PSTP board

LD9: Paper Photocell Status Indicator
This LED indicates the status of the Paper Photocell – paper breaks reflection to detector. If there is no paper under the photocell, LD9 will be on. If there is paper under the photocell, LD9 will be off. If this LED does not change state when breaking the Paper Photocell, the following are possible causes:

- Paper Photocell not plugged into J13 on PSTP board or Photocell cable broken
- Photocell not aligned properly or photocell broken
- Paper photocell circuitry not functioning – replace PSTP board

LD10: PSTP Transmit Indicator
This LED will be lit whenever the PSTP board communicates to the ICPU/Display boards. When the PSTP transmits, LD10 should flash for a short period of time. When the PSTP is not transmitting, LD10 should be off. If this LED does not flash ~ 4s after power up or if it is always on, the following are possible causes:

- SCI phone cable not plugged into J15 on PSTP board and J1 on ICPU board
- SCI phone cable made incorrectly or broken
- Incorrect SW version for PSTP (3K SW **not** compatible with ICPU board)
- PSTP transmit circuitry not working (error message should be displayed) – replace PSTP board

LD11: PSTP Receive Indicator
This LED will be lit whenever the ICPU/Display boards communicate to the PSTP board. When the ICPU transmits, LD10 should flash for a short period of time. When the ICPU is not transmitting, LD10 should be off. If this LED does not flash ~ 4s after power up or if it is always on, the following are possible causes:

- SCI phone cable not plugged into J15 on PSTP board and J1 on ICPU board
- SCI phone cable made incorrectly or broken
- Incorrect SW version for PSTP (3K SW **not** compatible with ICPU board)
- PSTP receive circuitry not working (error message should be displayed) – replace PSTP board

Low Voltage Solenoid Board

The probable causes for LVS faults assume that there are no problems with the PSTP board i.e. assume that all of the problems listed above for the PSTP board are not present.

LD8: Primary +12V Supply Indicator
This LED indicates whether the primary +12V logic supply on the LVS board is live. If this LED is not on, the following are possible causes:

- Short on the P+12V line – replace LVS board

LD10: Secondary +12V Supply Indicator
This LED indicates whether the Secondary +12V logic supply on the LVS board is live. If this LED is not on, the following are possible causes:

- LVS cable not plugged into J15 on LVS board and J8 on PSTP board
- LVS cable broken or not made correctly
- Short on the S+12V line – replace LVS board

ICPU/Display Boards

The probable causes for ICPU faults assume that there are no problems with the PSTP board. i.e. assume that all of the problems listed above for the PSTP board are not present.

LD1: Secondary +5V Supply Indicator
This LED indicates whether the secondary +5V supply on the ICPU is live. If this LED is not on, the following are possible causes:

- SCI phone cable not plugged into J15 on PSTP board and J1 on ICPU board
- SCI phone cable made incorrectly or broken
- VR1 not functioning or short on S+5V line – replace ICPU board

8. Self-Diagnostic Features

The PS8050 features electronics that allow the machine to monitor various components. If the machine detects an inconsistency through the self diagnostics, the operator will be notified through a display message and the machine may be disabled to avoid unwanted damage from occurring. The following is a list of possible self-diagnostic messages:

SOL 1 or **2 FAIL OPEN**

Indicates that the circuit has read an incorrect value when reading the solenoid and one of following has occurred:

- The solenoid is not plugged in to the channel being operated.
- There is a wiring failure from the circuit to the solenoid. Trace the wiring to locate the failed connection.
- The solenoids have been under severe operating conditions such as full speed running or multiple numbers per sheet over a long period of time. The solenoids have been shut down before they heat to an unsafe level. The machine has stopped operation to let the solenoids cool down.

SOL 1 or **2 FAIL SHORT**

Indicates that the machine has detected a short circuit in the solenoid operation. The following are possible causes:

- Solenoid windings have 40-42 W resistance in the electric solenoid drive unit (1.06-1.08K W resistance in the pneumatic drive unit). Unplug the drive unit(s) from the machine. The resistance can be checked at the male plug end across the 2 opposing pins. If the resistance is substantially less, the solenoid requires replacement. The third pin is ground. Check from each opposing pin to the ground pin. The resistance reading should be 0. If there is a resistance reading, there is a short to ground and the drive unit requires replacement (part # 15-072-GW for electric solenoid & 10-074-GW for pneumatic).

- There is a wiring harness connecting the circuit board to the drive unit(s). If the solenoid resistance readings are OK and there is no short to ground detected, plug the drive unit(s) back into the machine. Next, access the circuit boards. The wiring harness connects to the solenoid board (right board) at the top right connector (marked SOL 1 2; J5). Metering the resistance at the connectors on the solenoid board should have the same results as at the drive unit(s). If the reading is 0 with the drive unit(s) attached, there must be a break in the wiring harness (no continuity). Replace or repair the wiring harness (part # 10-069-GW).

- The third possible cause may be the circuit itself. There is a green LED (marked LD3) which indicates power to the board. If the LED is not lit, check the 3A slow blow fuse (at position FC1/FC2). If the fuse is blown, replace and retest. If the fuse is not blown, verify that the board is being supplied with approximately 115 VAC at the top left connector (marked J6) across the 2 orange wires. If there is no voltage detected, there may be a power supply problem which will require further diagnostics. If either of the red LEDs marked SOL 1/2 FAIL (at positions LD1/LD2) are lit, there is a failure on the circuit board and the solenoid board requires replacement (part # 50-028-GW).

STEPPER FAILURE - CYCLE POWER

Indicates an inconsistent reading in the drive circuits for the motor. Turn off the main power, leave it off for 10 full seconds, turn back on, and test. If this fails to correct the problem after three attempts, additional diagnosis is required:

- Ensure all wire connections are tight to the board and that the boards are tight together. Through transportation and vibration from use, the boards may have lost solid contact.
- Check the fuse on the motor board. If it is blown, the motor board requires replacement (part # 50-027-GW). Please refer to voltage requirements before replacing the circuit board.
- If the prior two tests do not correct the problem and the red FAULT LED is lit on the board, a replacement motor board should be ordered (part # 50-027-GW).
- If you encounter great resistance when turning the handwheel, there may be a short on the stepper motor circuit causing a short of the motor leads. To verify, unplug the motor from the circuit board and try to turn the handwheel again. If the handwheel now turns freely, the motor board does require replacing (part # 50-027-GW). To further verify the motor is OK, check the resistance of each phase of the motor. There are two color pairs from the motor: a red wire and a white wire with red strip; and a green wire with a white wire with a green strip. Each color pair should have a 1 to 1.5 W resistance reading. If either wire pair reads open, it is highly unlikely that there is a fault with the motor but more likely there is a fault with the connection in the connector. Reseat the wires in the connector by pushing in the wires into the connector with a narrow slot screwdriver.

PAPER JAM

If you encounter this message but there is no paper jammed in the machine, it is an indication of a problem with the photocell itself. First check that the photocell is clean. Use compressed air or a dry cotton swab to clean the cells. Do not use any chemicals or the cells may be damaged.

If the cells are clean but the message persists, then the photocell is probably out of alignment. See Photocell Adjustment section of this manual for instructions.

PAPER TOO SHORT/LONG

These messages will appear under the following circumstances:

- The machine is detecting a mix of stock sizes
- There is a double feed
- The stock is drilled or punched and the holes are passing under the photocell

If the above conditions are not true, the photocell may be misaligned. See Photocell Adjustment section of this manual for instructions.